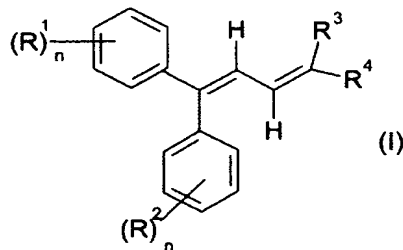


WHAT IS CLAIMED IS:

1. A stable UV-photoprotective, phase inverted oil-in-water emulsion, the average size of the globules which constitute the oily phase thereof ranging from 100 nm to 1,000 nm, comprising inorganic metal oxide nanopigments and at least one organic UV-screening agent, and also comprising at least one organic 4,4-diarylbutadiene UV-A-screening agent.
2. The oil-in-water emulsion as defined by Claim 1, the average size of the oily globules ranging from 100 to 500 nm.
3. The oil-in-water emulsion as defined by Claim 1, at least 90% in numerical terms of said globules having a size ranging from 100 nm to 1,000 nm.
4. The oil-in-water emulsion as defined by Claim 1, comprising nanopigments of titanium, zinc, iron, zirconium or cerium oxides, or mixtures thereof, whether coated or uncoated.
5. The oil-in-water emulsion as defined by Claim 4, comprising nanopigments of titanium oxide, whether coated or uncoated.
6. The oil-in-water emulsion as defined by Claim 5, comprising nanopigments of titanium oxide in rutile, anatase or amorphous form.
7. The oil-in-water emulsion as defined by Claim 1, the content by weight of the nanopigments ranging from 0.5% to 40% of the total weight of the composition.

8. The oil-in-water emulsion as defined by Claim 1, said at least on 4,4-diarylbutadiene UV-A-screening agent having the following formula (I):



in which the diene system is of the Z,Z; Z,E; E,Z or E,E configuration or mixture of said configurations, and wherein:

R¹ and R², which may be identical or different, are each hydrogen, a C₁-C₂₀ alkyl radical, a C₂-C₁₀ alkenyl radical, a C₁-C₁₂ alkoxy radical, a C₃-C₁₀ cycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₁-C₂₀ alkoxycarbonyl radical, a C₁-C₁₂ monoalkylamino radical, a C₁-C₁₂ dialkylamino radical, an aryl radical, a heteroaryl radical or a water-solubilizing substituent selected from among a carboxylate residue, a sulfonate residue or an ammonium residue;

R³ is a group COOR⁵, COR⁵, CONR⁵R⁶, CN, O=S(-R⁵)=O, O=S(-OR⁵)=O, R⁷O-P(-OR⁸)=O, a C₁-C₂₀ alkyl radical, a C₂-C₁₀ alkenyl radical, a C₃-C₁₀ cycloalkyl radical, a C₇-C₁₀ bicycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₇-C₁₀ bicycloalkenyl radical, an optionally substituted C₆-C₁₈ aryl radical, an optionally substituted C₃-C₇ heteroaryl;

R⁴ is a group COOR⁶, COR⁶, CONR⁵R⁶, CN, O=S(-R⁶)=O, O=S(-OR⁶)=O, R⁷O-P(-OR⁸)=O; a C₁-C₂₀ alkyl radical, a C₂-C₁₀ alkenyl radical, a C₃-C₁₀ cycloalkyl radical, a C₇-C₁₀ bicycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₇-C₁₀ bicycloalkenyl radical, an optionally substituted C₆-C₁₈ aryl; an optionally substituted C₃-C₇ heteroaryl radical;

the radicals R⁵ to R⁸, which may be identical or different, are each hydrogen, a C₁-C₂₀ alkyl radical, a C₂-C₁₀ alkenyl radical, a C₃-C₁₀ cycloalkyl radical, a

C₇-C₁₀ bicycloalkyl radical, a C₃-C₁₀ bicycloalkenyl radical, a C₇-C₁₀ cycloalkenyl radical, an optionally substituted aryl radical, an optionally substituted heteroaryl radical;

n ranges from 1 to 3; with the proviso that the radicals R³ to R⁸ can together form, with the carbon atoms from which they depend, a C₅-C₆ ring which may be fused.

9. The oil-in-water emulsion as defined by Claim 8, wherein said at least one compound of formula (I):

n = 1 or 2;

R¹ and R², which may be identical or different, are each hydrogen, a C₁-C₂₀ alkyl radical, a C₁-C₁₂ alkoxy radical, a C₁-C₁₂ monoalkylamino radical, a C₁-C₁₂ dialkylamino radical, a water-solubilizing substituent selected from among a carboxylate group, a sulfonate group or an ammonium residue;

R³ is a group COOR⁵, COR⁵, CONR⁵R⁶, a C₁-C₂₀ alkyl radical, a C₃-C₁₀ cycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₇-C₁₀ bicycloalkyl radical, optionally substituted phenyl, naphthyl or thienyl;

R⁴ is a group COOR⁶, COR⁶, CONR⁵R⁶, a C₁-C₂₀ alkyl radical, a C₃-C₆ cycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₇-C₁₀ bicycloalkyl radical, optionally substituted phenyl, naphthyl or thienyl; and

the radicals R⁵ and R⁶, which may be identical or different, are each hydrogen, a C₁-C₁₂ alkyl radical, a C₃-C₁₀ cycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₇-C₁₀ bicycloalkyl radical, a C₃-C₁₀ bicycloalkenyl radical, optionally substituted phenyl or naphthyl.

10. The oil-in-water emulsion as defined by Claim 9, wherein said at least one compound of formula (I):

R¹ and R², which may be identical or different, are each hydrogen, a C₁-C₂₀ alkyl

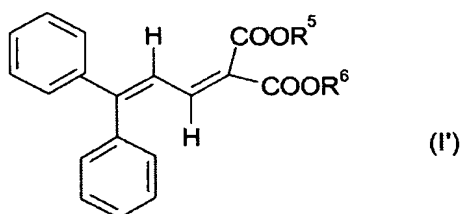
radical, a C₁-C₂₀ alkoxy radical, a water-solubilizing substituent selected from among a carboxylate group, a sulfonate group or an ammonium residue;

R³ is a group COOR⁵, COR⁵, CONR⁵R⁶;

R⁴ is a group COOR⁶, COR⁶, CONR⁵R⁶; and

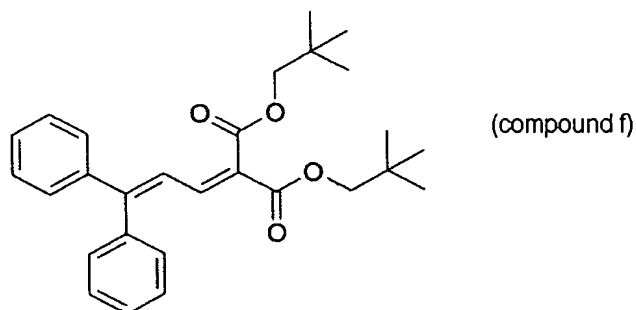
the radicals R⁵ and R⁶, which may be identical or different, are each hydrogen, a C₁-C₁₂ alkyl radical, a C₃-C₆ cycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₇-C₁₀ bicycloalkyl radical, a C₃-C₁₀ bicycloalkenyl radical, optionally substituted phenyl or naphthyl.

11. The oil-in-water emulsion as defined by Claim 10, said at least one compound of formula (I) having the following formula (I'):

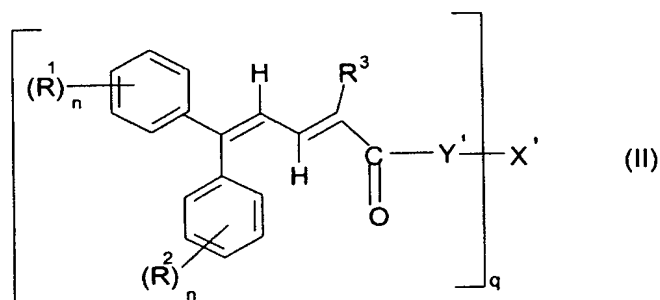


wherein the radicals R⁵ and R⁶, which may be identical or different, are each hydrogen, a C₁-C₂₀ alkyl radical, a C₃-C₆ cycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical.

12. The oil-in-water emulsion as defined by Claim 11, said compound of formula (I') comprising the 1,1-dicarboxy(2,2'-dimethylpropyl)-4,4-diphenylbutadiene derivative having the structure:



13. The oil-in-water emulsion as defined by Claim 1, said at least one 4,4'-diarylbuta-1,3-diene UV-A-screening agent having the following formula (II):



in which the diene system is of the Z,Z; Z,E; E,Z or E,E configuration or mixture of said configurations and wherein:

R^1 , R^2 , R^3 and n have the meanings indicated in the formula (I);

Y' is a group -O- or -NR⁹-;

R^9 is hydrogen, a linear or branched C₁-C₂₀ alkyl radical, a C₂-C₁₀ alkenyl radical, a C₃-C₁₀ cycloalkyl radical, a C₇-C₁₀ bicycloalkyl radical, a C₃-C₁₀ cycloalkenyl radical, a C₇-C₁₀ bicycloalkenyl radical, an aryl radical, a heteroaryl radical;

X' is a residue of a linear or branched, aliphatic or cycloaliphatic C₂-C₂₀ polyol comprising from 2 to 10 hydroxyl groups and having the valency q ; with the proviso that the carbon chain of said residue may be interrupted by one or more sulfur or oxygen atoms, one or more imine groups, one or more C₁-C₄ alkylimino

groups; and

q ranges from 2 to 10.

14. The oil-in-water emulsion as defined by Claim 13, wherein said compound of formula (II):

R^1 and R^2 , which may be identical or different, are each hydrogen, a C_1 - C_{12} alkyl radical, a C_1 - C_8 alkoxy radical, a water-solubilizing substituent selected from among a carboxylate group, a sulfonate group or an ammonium residue;

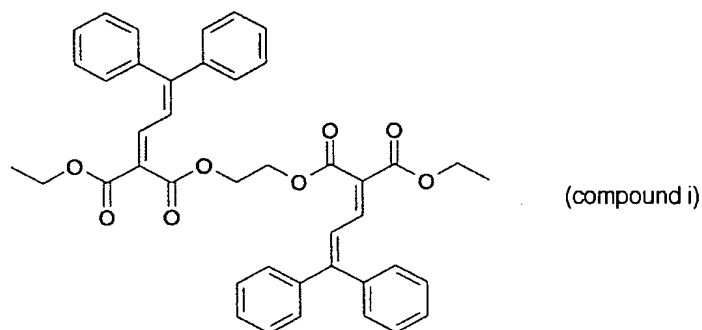
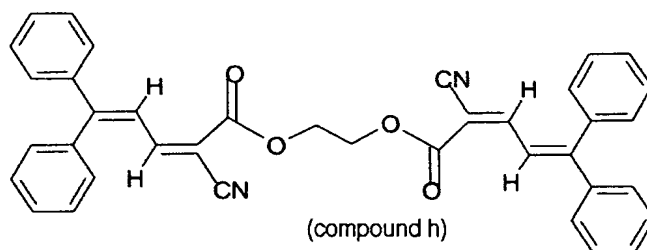
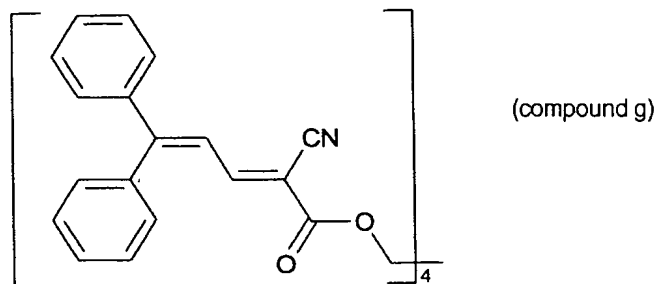
R^3 is a group $COOR^5$, $CONR^5R^6$, CN ; a C_3 - C_{10} cycloalkyl radical, a C_7 - C_{10} bicycloalkyl radical;

R^5 and R^6 , which may be identical or different, are each a linear or branched C_1 - C_{20} alkyl radical, a C_3 - C_{10} cycloalkyl radical, a C_7 - C_{10} bicycloalkyl radical, optionally substituted naphthyl or phenyl; and

X' is a C_2 - C_{20} polyol residue comprising from 2 to 6 hydroxyl groups.

15. The oil-in-water emulsion as defined by Claim 14, wherein said compound of formula (II), X' is an ethanol or pentaerythritol residue.

16. The oil-in-water emulsion as defined by Claim 15, said compound of formula (II) being selected from among:



17. The oil-in-water emulsion as defined by Claim 1, said at least one 4,4-diarylbutadiene UV-A screening agent constituting from 0.1 % to 20 % by weight relative to the total weight of the emulsion.
18. The oil-in-water emulsion as defined by Claim 1, further comprising at least one additional organic sunscreensing agent active in the UV-A and/or UV-B regions, water-soluble, fat-soluble or insoluble in the usual cosmetic solvents.
19. The oil-in-water emulsion as defined by Claim 18, comprising at least one additional organic screening agent selected from among the anthranilates; cinnamic

derivatives; dibenzoylmethane derivatives; salicylic derivatives, camphor derivatives; triazine derivatives; benzophenone derivatives; β,β' -diphenyl acrylate derivatives; benzotriazole derivatives; benzalmalonate derivatives; benzimidazole derivatives; imidazolines; bis-benzoazolyl derivatives; p-aminobenzoic acid (PABA) derivatives; benzoxazole derivatives; methylenebis(hydroxyphenylbenzotriazole) derivatives; screening polymers and screening silicones; dimers derived from α -alkylstyrene and mixtures thereof.

20. The oil-in-water emulsion as defined by Claim 19, comprising at least one additional organic screening agent selected from among:

Ethylhexyl Salicylate,

Ethylhexyl Methoxycinnamate,

Octocrylene,

Butyl Methoxydibenzoylmethane,

Phenylbenzimidazole Sulfonic Acid,

Benzophenone-3,

Benzophenone-4,

Benzophenone-5,

n-Hexyl 2-(4-diethylamino-2-hydroxybenzoyl)benzoate,

4-Methylbenzylidene camphor,

Terephthalylidene Dicamphor Sulfonic acid,

Disodium Phenyl Dibenzimidazole Tetra-sulfonate,

2,4,6-Tris(4'-diisobutyl aminobenzalmalonate)S-triazine

Anisotriazine,

Ethylhexyl triazone,

Diethylhexyl Butamido Triazone,

Methylene bis-Benzotriazolyl Tetramethylbutylphenol,

Drometrizole Trisiloxane,
Polysilicone 15,
2,4-Bis-[5-1-(dimethylpropyl)benzoxazol-2-yl-(4-phenyl)imino]-6-(2-ethylhexyl)imino-1,3,5-triazine,
and mixtures thereof.

21. The oil-in-water emulsion as defined by Claim 1, further comprising at least one agent for artificial bronzing and/or tanning of the skin.

22. The oil-in-water emulsion as defined by Claim 1, further comprising at least one cosmetic adjuvant selected from among organic solvents, ionic or nonionic thickeners, demulcents, humectants, opacifying agents, stabilizers, emollients, silicones, insect repellents, perfumes, preservatives, surfactants, fillers, pigments, polymers, propellants, alkalizing or acidifying agents or any other ingredient commonly employed in the cosmetic and/or dermatological field.

23. The oil-in-water emulsion as defined by Claim 1, comprising an emulsifying system.

24. The oil-in-water emulsion as defined by Claim 23, said emulsifying system comprising one or more emulsifying agents of the nonionic type and selected from among polyoxyethylenated and/or polyoxypropylenated fatty alcohols, and optionally polyoxyethylenated and/or polyoxypropylenated fatty acid esters and polyol esters.

25. The oil-in-water emulsion as defined by Claim 24, said emulsifying system having an overall HLB ranging from about 9.5 to 11.5.

26. The oil-in-water emulsion as defined by Claim 25, said emulsifying agent constituting from 0.5% to 40% by weight relative to the total weight of the emulsion.

27. The oil-in-water emulsion as defined by Claim 1, the aqueous phase thereof constituting from 50% to 95% of the total weight of the emulsion.

28. The oil-in-water emulsion as defined by Claim 1, the oily phase thereof constituting from 5 to 50% of the total weight of the composition.

29. A method for formulating an oil-in-water emulsion as defined by Claim 1, comprising:

(i) mixing a fatty phase and an aqueous phase in the presence of an emulsifying system and of at least one 4,4-diarylbutadiene UV-A-screening agent, with stirring, said mixing being carried out at a temperature greater than the phase inversion temperature (PIT) of the medium, so as to obtain a water-in-oil type emulsion.

(ii) adjusting the temperature of the emulsion thus obtained to a temperature below said phase inversion temperature, thereby obtaining an ultrafine emulsion of the oil-in-water type; and

(iii) introducing inorganic nanopigments during the step (i) and/or at the end of step (ii).

30. A method for photoprotecting the skin, lips and/or hair against the damaging effect of UV-radiation, comprising topically applying thereon, a thus effective amount of a stable UV-photoprotective, phase inverted oil-in-water emulsion, the average size of the globules which constitute the oily phase thereof

ranging from 100 nm to 1,000 nm, comprising inorganic metal oxide
nanopigments and at least one organic UV-screening agent, and also comprising at
least one organic 4,4-diarylbutadiene UV-A-screening agent.